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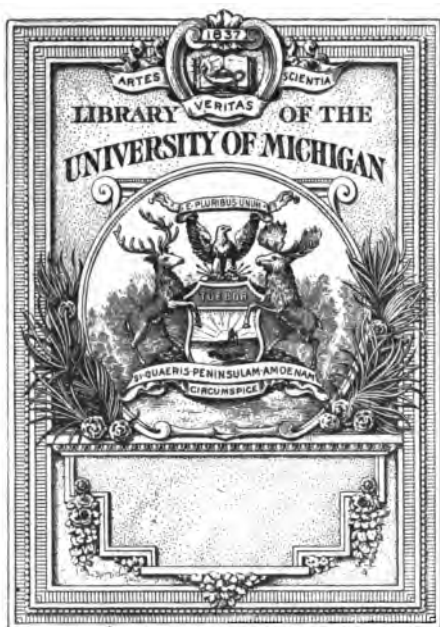
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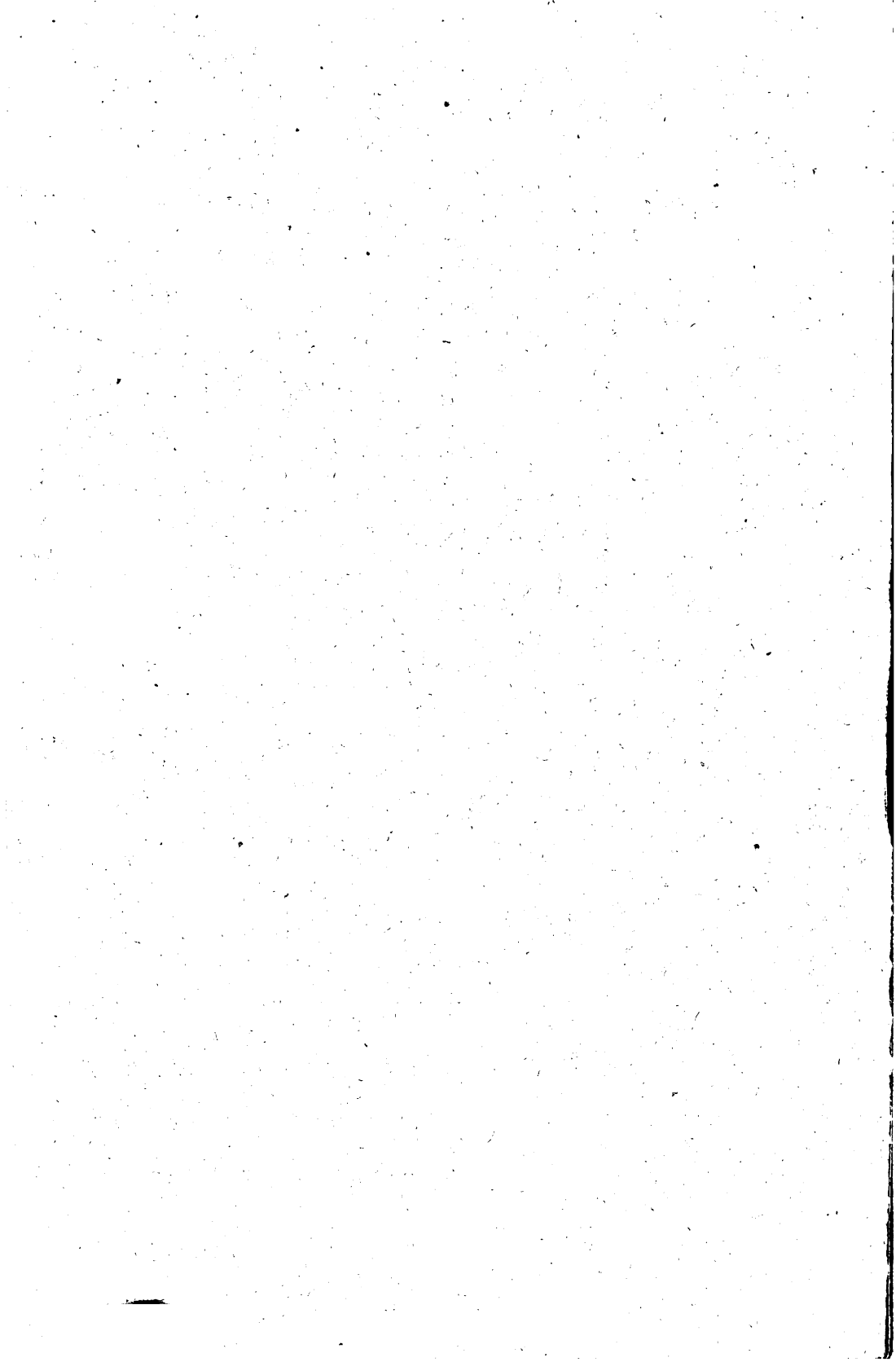
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**A DISCUSSION
OF
TELEPHONE COMPETITION**

BY

**JOHN H. AINSWORTH
GANSEY R. JOHNSTON**

with a preface by

FRANK L. BEAM



**ISSUED BY THE
OHIO INDEPENDENT TELEPHONE ASSOCIATION
COLUMBUS, OHIO**

FEBRUARY, 1908

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OHIO INDEPENDENT TELEPHONE ASSOCIATION

P R E F A C E

Contained in this pamphlet are two letters prepared in connection with Ohio House Bill No. 1037, introduced by Representative Stewart, of Clark county. This bill provides for the extension of the powers and duties of the State Railroad Commission to cover telephone companies; the publication of telephone rates, with the regulation thereof by the Railroad Commission; prohibition of discriminatory local or long-distance rates; prohibition of combination or interconnection of competing exchanges or toll lines; the conferring of the right upon the Commission to decide the mode and manner in which telephone companies may use streets and highways in event of failure to agree with municipalities.

The bill throughout is acceptable to the independent companies. The Bell companies appear disposed to object to Section 9, which prohibits combinations of and interconnections between competing companies.

The request of a legislator (who has asked that his name be not published) for an expression from the Dayton Home Telephone Company on this Section 9, led to the writing of the letter of General Manager Ainsworth. My request for further expression, dealing particularly with the subject of competition in the telephone business, was met in the letter from General Manager Johnston, of the Columbus Citizens Telephone Company.

Mr. Ainsworth's letter is largely a recital of telephone history, as relates to the inadequacy and imperfect service before competition, the springing up of competition in response to the public demands, the results thereof in improvement of service, lowering of rates, extension of exchange lines, extensions to rural districts, extension of toll lines, establishment of exchanges in small towns, the improvements in equipment, etc.

Some of these items are illustrated by reference to the Columbus plant. The illustrations could be readily multiplied by any one who has observed telephone conditions in Ohio and other states. After all, this tremendous spontaneous growth is its own justification.

Mr. Ainsworth's argument is particularly apposite and impressive in relation to the efforts that have been and are being made on the part of the former monopolistic interests to break down the continuity of the competitive interests; in respect to the contract by which a combination was recently sought if not effected, at Marion, showing plainly the detrimental effect of such a contract upon competition; as illustrating the desires of independent companies for legislation protecting the competitive situation; reciting the

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Ind. Telephone Co.

almost disastrous effects of the removal of any important portion of the independent interests, as by the acquirement, through any process, of any important independent plant like that at Columbus, or worse than all, the toll line connections of the United States Telephone Company.

Mr. Johnston discusses telephone competition on economic grounds. A summary of the argument closes his letter. He shows how and why the telephone business has been of that class in which competition works the best results; that the costs and wastes of competition in investment and expense are of small account compared with the benefits. The business is different in its essentials from those in which the combining and monopolistic tendencies are powerful.

The real question before the Legislature of Ohio, as it has been before most of the legislative municipal bodies, is whether the telephone business is one of competition or monopoly. If of competition, then the state, which has sought to force competition upon prospective combinations in other businesses, should seek to conserve it in this.

Requiring or even permitting interconnection between telephone competitors is the first of a series of inevitable steps leading to monopoly.

Which would be more likely to succumb in the struggle for monopoly—those companies whose strength is in Ohio where their advantage would be taken away, or those companies whose strength covers the country for which Ohio cannot legislate? If the long-distance lines are monopolized, then the local plants would soon follow.

These papers are necessarily long. Sub-headings assist the reading of them. I trust that every one who is interested in the subject will take time for their careful perusal. Either of the writers or myself will be pleased to receive comment, additional illustrations, or criticisms.

FRANK L. BEAM.

THE HOME TELEPHONE COMPANY

DAYTON, OHIO

FEBRUARY 18, 1908.

Hon. ———, Ohio Legislature, Columbus, Ohio:

DEAR SIR—Replying to your inquiry of the thirteenth, asking the views of The Home Telephone Company of Dayton, as to Section 9 of House Bill No. 1037, which proposes to make it unlawful for competing telephone companies to combine their exchanges, or for one company to connect its exchange with the toll lines of a competing telephone company, I beg to state that my company is very positively in favor of such a provision.

Such a law will strengthen and support existing state as well as national laws upon the question of monopolistic combinations of all kinds, and such a provision will make more definite and certain the continuation of that most desirable of public benefits—competition.

We are an independent telephone company, which means above everything else, when the history of the telephone business in this country is considered, that we are competitors of the original telephone system, which has different names in different parts of the country, yet is, in its corporate existence, really one, and is known generally as the Bell Telephone Company.

Our birth as an independent telephone company was primarily due to a cry of the people for relief from what was to them exorbitant rates, inadequate service, and in many cases indifferent treatment. As an evidence that this statement is borne out by facts, it seems pertinent to call attention to the practical unanimity with which the cities and villages have granted franchises to competing telephone companies, there being at the present time something over 350 such incorporations in existence in Ohio alone. We believe in competition in this business as fully as we believe in competition in any other. We believe this because of evidences of many kinds which have resulted from our intimate acquaintance and association with the business, our observation of the conditions which surround it, and our view of its future. A few of these we will detail in answer to your further question.

I take occasion to offer here the foreword that any comprehensive answer to your inquiry will, because of the repetition of history necessary, certainly entail a communication of some length, and there may appear

therein some strictures upon the Bell Telephone Company. The foreword is offered, then, in the hope that I may presume upon your patience in its recital, and that you may know the detail is one of facts, also that any seeming criticism is merely incident to the intimate history of the matter and is not made in a malicious spirit.

Effect of Interchange of Business.

Now for your further question, "Would it be in any way in public interest to prevent such an interchange of business?" My answer is, yes, it is in public interest to prevent such an interchange. The reasons are upon the broad ground that the passage of such a law will conserve competition and effectually forestall the elimination of the independent telephone systems and consequently of competition in the telephone business.

This is threatened by every artifice known to the Bell Telephone Company, whose contention has always been that the telephone business is one of natural monopoly, and whose dream, it is the belief of the writer, is of a return to the monopolistic conditions which existed prior to the advent of independent telephony. This belief is incident to observation of the methods pursued by it. Further, there is evidence of possible selfishness or lack of foresight upon the part of some independent operators and of timidity upon the part of others.

It will therefore readily appear that your questions will have been properly answered if such competition as exists and is in prospect in the telephone business can be justified upon the ground of public benefit. If it can, then certainly any law which will tend to continue or encourage it, should be, and we believe will be, supported.

The first telephone was exhibited at the Philadelphia Centennial, I believe, and it is probable that the first Bell telephone systems were established in the several years from 1878 to 1881. The Bell Telephone Company was organized and its business built up around the patents which were granted to Professor Bell. During the years between the above dates and 1895, they, under the protection of the patent laws, enjoyed practically a complete monopoly of the business, and the reward they received was indeed princely. During that period of monopoly, however, extending over, approximately, twenty years, they had so handled the business, by failures of both omission and of commission, that there were hardly three hundred thousand telephones in use in the entire United States or not more than are operated by the independent telephone companies within the single State of Ohio at the present day, after only a little more than ten years.

Early Telephone History.

Previous to 1895, when independent telephony began, it was next to impossible for a small town to get even a toll station established; and then, in nearly every case, a guarantee of tolls was asked, the amount of which would more than construct the line. Exchanges in small towns and rural lines were practically unknown. The style and efficiency of the transmitter was the same practically throughout the monopoly and the circuit conditions had undergone little or no change, the lines being mostly grounded circuits of iron wire and the service consequently subject to noise from earth currents, cross-talk and other inductive disturbances. Operators' service was given very little attention, as compared with present-day methods, to see it was prompt, correct and courteous. Because of the style of their organization, they failed to properly appreciate conditions peculiar to varying localities, as affected by their general policies.

While these illustrations might be further multiplied, and while all contributed to the general dissatisfaction of the public, probably the strongest ground for complaint was exorbitant rates. Possibly there is some merit in the claim by the Bell Company that the evolution of the business prevented extensive developments. It appears, however, from the impetus given to inventions, as soon as the field was opened and other markets made available to inventors, that they had signally failed to make the best of their opportunities, and such claim is thus severally arraigned.

Rapid Competitive Development.

Now the first constructors of independent telephone exchanges never dreamed of such a development as has taken place. For some time their interest was confined to intercommunication within their own immediate vicinity. As the news of the successful operation of such independent systems spread, exchanges sprang up in many places, and there grew up such necessity for connection between exchanges, that eventually the United States Telephone Company was organized to supply the independent systems of Ohio with that which was felt to be their greatest need and that which it was well-nigh impossible for them either singly or collectively to supply—an independent long distance system, which should connect their systems with each other and with systems in adjoining states.

First Effects.

The very first effect of competition was a bettering of the service rendered by the Bell Company by more careful attention to operators' work, the substitution of either common return or metallic circuits for grounded lines, and, the introduction of different grades of service (party lines) by which means they offered cheaper rates with the minimum of reduction in

revenue per line to themselves. This plan was in many places followed very shortly by reductions in rates for the best grades of service, due to the strength of the competition. After these came quickly, the extension of toll lines to small places, and a marked difference in their interest in local conditions. There was in consequence a revision of their policies as applied to points where competition existed or was being agitated.

Solicitors were put out, who visited and re-visited non-users of service, and the advantages of service were enlarged upon. This agitation brought increased subscribers for both systems. Measured by the most reasonable standard—that the more connections made possible the more valuable is the telephone to the existing subscribers—this agitation bore delicious competitive fruits. This proposition is exactly analogous to the increased value of a newspaper to the advertiser, growing out of an increase in its subscription list.

Benefits of Competition.

Summed up then, the results of competition in the telephone business have been substantially as follows:

Improvement of service on the part of both interests, each realizing that its first and most important function is the continuous giving of good service; and each contending with the other not only as to whose service should be the best, but also for the multiplication and extension of its plant and service to meet the demands of the public.

A cheapening of service charges, thus enabling the earners of modest wages to have telephone service. This feature probably affected favorably a much greater number of persons than any other one thing.

Extension of exchange lines, thus enabling the farmers and rural residents to have the advantages of telephone service, a detail of which it seems unnecessary to give here.

Extension of toll lines, thus affording the residents of towns too small to support an exchange, means of telephone communication with the outside world, lifting them out of their rural seclusion, a boon long sought without effect and one the value of which should not be underestimated.

Exchanges in small towns. Not only did the Independent Company readily recognize the needs of small towns, nearby to the county seats (where usually competition first took shape) but they anticipated the strengthening of their own position as against their competitor, by supplying that need. In this they were followed, to some extent, even if tardily, by the Bell Company, and competition thus silenced for the small community a crying need.

Damages of Competition?

Now in natural sequence we arrive at the question, What damage then has competition done, and to whom? Estimating, as near as may be, the duplications of service on account of competition at fifteen per cent., and bearing in mind that a very great number of subscribers who retain both services have such use for service as would require two telephones even if competition did not exist, and remembering the great number of persons to whom the advantages of telephone service far exceed the cost of both services, then there remains a very small proportion who are damaged. These may be damaged in several ways; first, by being required to furnish space for a second instrument; second, to distinguish by the sounds of the bell which telephone is calling; third, by the inspection of two lists to find the party; and fourth, slightly larger payments for two telephones than previously for one.

In the first case, the damage is inconsiderable. In the second, it is subject to easy adjustment. In the third, the damage is greatly mitigated by knowledge as to which line the desired party has. In the fourth case, when the subscriber gives proper credit on account of better service and measures the quantity value of the service received by the proper rule, he will quickly discover that not only is he getting better service for his money, but is getting so much more service than formerly that it is an entirely truthful statement that he is really getting cheaper service than ever before.

Competition Illustrated.

For illustration we need go no further than our own Capital City, Columbus.

Briefly the facts are these: In Columbus immediately prior to the organization of the independent company, the Bell Company operated less than 1900 telephones. It charged for its best and highest grade of business service, \$96.00 per year. At the present time it is charging \$54.00 per year for like service, and gives connection with approximately 11,000 telephones. The Columbus Citizens (Independent) Company, whose rate for the same character of service has always been \$40.00 per year, is serving approximately the same number of subscribers.

Let us sum it up. The present Columbus subscriber, who finds it either convenient or necessary to keep two such services, pays \$54.00 for one and \$40.00 for the other, or a total of \$94.00 per year, \$2.00 less annually for two than one cost him before competition, and what does he get? Connection with 22,000 telephones instead of 2000, or, in other words, competition has brought to the alleged burdened business man who has to keep two telephones, 20,000 more telephones to talk with, and has handed him a \$2.00 yearly rebate in the bargain.

U. of M.

Damage may have been done to each or either of the competing telephone companies, by loss of subscribers, due to lack of flexibility of its system or in its methods or policies as affecting some particular location.

Intercommunication Between Systems.

It may be well to include in this argument, while not, strictly speaking, a true damage, that lack of opportunity which is complained of by some persons who desire intercommunication between the two systems. We have shown that the public has gained greatly through the stimulus of competition. The business, even now, is an undeveloped, intricate and delicate one. It must readily appear that the establishment of interchange business conditions would not only interfere with the reasonable expectations of competition along the lines of the past, but would seriously endanger the advantages which have been so far gained.

It seems far more desirable, then, that competition be trusted and encouraged. We believe that its history and performance furnish ample guarantee as to its efficacy in this business. In its undeveloped and complex state, and in view of the fact that there is so much to be learned as to units of costs, and standards of value, as well as schemes of operation, and the like, it appears that competitive conditions should by all means be fostered.

It may seem that this talk has taken us somewhat afield, but I think the information will be found to have full value in the further discussion of the matter.

Proposed Curtailment of Competition.

The question which now arises is doubtless this one: Is there any practice being indulged in, or any method of operation or combination proposed, which will seriously tend to curtail or eliminate competition? This question is answered in the affirmative.

It is a maxim of warfare to concentrate your strongest force upon the enemy's weakest part. It is this style of attack which is not only proposed but is being used in this state. This is the kind of warfare, if you please, which is at the foundation of the sub-license agreements which are being submitted to independent telephone companies by their competitor. The truth of this is, I think, conclusively demonstrated when we analyze the contract which was recently entered into at Marion, a copy of which contract may be seen at the office of the Attorney General, who is asking the courts to declare such contract against public policy and therefore void.

The Marion Situation.

In substance, that contract (actually in effect today) provided that, after the consummation of the sale of the Central Union (Bell) Telephone

Company's plant to the Marion company (thus eliminating competition in Marion), the Marion company, which has made connection with the toll lines of the Bell Company, should thereafter pass every toll message originating in Marion for outside points over the lines of the Bell Company, which that company could carry to destination. This means that the Marion company has by the execution of this contract probably conspired not only against the United States Telephone Company, but also against such of its own subscribers as might prefer to use independent toll lines.

If the provision of the Marion contract just referred to does not show clearly enough the real basis for the apparent sacrifice by the Bell Company of its plant and its local business at Marion, then let us quote from the contract the substance of a later clause: "The toll receipts of the United States Telephone Company for originating toll business in Marion shall never hereafter exceed monthly the amount of such tolls for the month of _____," the month next preceding the execution or completion of the contract.

The Bell Company's Claim.

The Bell Company, I presume, insists, and there is some basis for a claim, that they expected by such an agreement to not only add to their system the number of subscribers which the Marion company was operating in excess of the number the Bell Company had, but further to add to their toll receipts. It is a matter of grave doubt, however, whether even the *maximum* advantage which they could thus expect, would justify the sacrifice made by them. It therefore may profit us to inquire as to the apparent intention of the clause limiting the possible earning power of the United States lines, particularly as contracts of this character, with some possible slight differences, have been submitted to a number of independent telephone companies in Ohio, and, we hear it said, in other states.

Possible Effect Upon United States Telephone Company.

Now it is apparent that if success attends the efforts of the Bell Company to secure the execution and performance of such contracts by a considerable number of independent companies, the United States Telephone Company will suffer severely from the curtailment of its revenue; and occupying the position which it does in relation to the independent companies in this state, it is difficult to conceive of any line of attack which our competitor could follow that is as pregnant with disaster, or which tends so strongly toward the curtailment or the elimination of competition. This, it seems to the writer, is one of the very best reasons why Section 9 in House Bill No. 1037 should remain, embodying as it does the very best provision for the continuation of telephone competition, which competition

has brought to the mass of people benefits otherwise impossible of attainment and the promise of which for the future is full to overflowing, particularly if encouraged by the state.

The passage of a law which would either make lawful or enforce an interchange of business, would minimize the advisability of further development of the telephone field. It should be readily apparent that with the abridgement of activity in a competitive field—be that field telephone or other—the first step has been taken toward monopoly and all for which it stands; and this the people, the state, and the national government have pronounced against in no measured terms.

Purpose of Proposed Enactment.

It must be well-nigh conclusive evidence that the general public favors competition, when it is remembered that over three hundred thousand independent telephones are in use by them in Ohio and it is reasonable to assume that they *have* an interest in the maintenance of competition and a serious desire for such laws as will perpetuate that condition.

Looked at from the standpoint of the independent telephone companies, this is the prospect: There are now three hundred and fifty regularly incorporated independent companies, in which twenty-seven thousand Ohio stockholders are interested, operating eight hundred and seventy-nine exchanges and three hundred and seven thousand telephones. These depend upon the toll lines of the United States Telephone Company, which lines form the very arteries and life of the independent telephone system. Legislation is desired in order that the independent telephone companies may be protected from any possibility of the United States Company's lines ever being absorbed by or falling into the hands of the Bell Telephone Company, the effect of which would be that the independent companies must duplicate and duplicate quickly the connections so lost or be starved or crushed out of existence.

Take, for instance, the loss of even one of the present competitive local systems—say, Columbus—suppose that the independent company there should combine with the Bell Company and cease to connect with the independent system—I leave to your own intelligent conclusion the disastrous effect which such a condition would have upon the other competing companies of the state.

I desire now to thank you sincerely for not only your inquiry but your patience, upon which I have necessarily presumed, and to say that I shall be very pleased at mutual convenience to talk with you in reference to these matters or to reply in writing to your further inquiry in such connection.

Yours truly,

J. H. AINSWORTH,
General Manager.

THE COLUMBUS CITIZENS TELEPHONE COMPANY

COLUMBUS, OHIO

FEBRUARY 18, 1908.

*Mr. Frank L. Beam, President Ohio Independent Telephone Association,
Columbus, Ohio:*

DEAR SIR—Replying to your request for an expression regarding that section of House Bill No. 1037, which proposes to make it unlawful for competing telephone companies to combine for either local or long-distance service—The Columbus Citizens Telephone Company is in favor of this prohibition.

In this letter I will enter upon a discussion of the desirability of competitive telephone conditions. Any combination or even connection of competing telephone exchanges or toll lines would be a long step toward abating or abolishing competition. It is not necessary to cite the benefits of competition in general. That business which purports to be an exception to the general rule must bear the burden of proof.

Public Gains Through Competition.

We believe that a large part of the public gains in the telephone service in ten years of competition (actual or threatened) is the result of that competition. In both local and long-distance telephone service, the public has gained a very much more extensive system of communication. There are in Cleveland now more telephones than were in Ohio ten years ago. It is true that forty odd per cent. of the number of Cleveland subscribers cannot talk to another like percentage without stepping to another telephone or paying toll or both; but, then, a like proportion of Ohio subscribers could not get connection with others even through toll stations.

There has been improvement in the equipment and service. There have been lower rates. As bearing upon this, I append an extract from the report of Engineer Harry P. Nichols to the Bureau of Franchises of the City of New York, dated November 21, 1906, under the heading of "Conclusions."

There has been a better attitude toward the public, in courtesy, accommodation and responsibility.

Great improvements in equipment have been brought about by competitive experiment in operation and manufacture. Choosing for an illustration the automatic telephone, which was one of the subjects of Mr. Nichols' report, the inventor originally offered the germ of this to the

monopoly telephone interests without success, and it awaited independent manufacturers—and I may say manufacturers of great boldness and foresight—for development. Other illustrations might be cited of the same sort. A restoration of monopoly conditions would tend to restrict the field of invention, which is a promising one.

The Monopolistic Argument.

By many the telephone service has been allied with gas, water, electric light and street railway services, and sought to be classed with necessary monopolies. The conditions of such monopoly are said to be the supplying of a necessity, the occupancy of peculiarly favored spots or lines of land, the supplying of the service in connection with a plant, and the ability to increase the service largely if not indefinitely without proportionate increase in capital and expense.

The public has not yet asked for telephone service in such numbers as to classify it wholly as a necessity. At any rate it is usually accessible for special calls, either with or without a toll charge. While telephone companies do occupy peculiarly favored lines of land, such are not so unique or exclusive as to necessitate a monopoly. Telephone service can, as a rule, be increased only by a disproportionate increase in capital and expenses. In other cases the increase in revenue is so little more than the increase in expenditure that the business must be considered as different in kind from one of largely increasing returns.

The telephone business differs in other particulars. For each new customer an investment must be made for which he is not taxed. He rents his portion of the plant, with its privileges, and his repeated use is not taxed in proportion to its value to him or its cost to the company. Invention has not yet found an acceptable way to get pay for the present large number of unpaid for local calls. To nothing like the same degree is telephone service municipal service. The business is in the making. The progress of invention has been rather in the interests of the public than the company. As I now recall, the gas and water interests are substantially as they were a generation ago. The electric light inventions of importance have been the enclosed arc and the use of alternating current, both in the interests of greater product at lower cost. The most important railway advance has been in the application of electricity and its improvements—also largely in the companies' interest. Invention has brought to these other profitable by-products, but practically none to the telephone companies.

One measure of gas or water or electricity from the same plant is substantially the same as any other measure. Street car travel, even, is largely regular and commonplace. Deterioration or failure is plainly visible to all or to large numbers of the users. If the product or service is not up to a

certain standard of quality or pressure or continuity, legal or administrative compulsion offers no extreme difficulty.

The telephone service has a large variety of forms, and a vaster variety in its uses. It comes into direct personal relations with the user, and imperfections or delays are associated with the purposes or emotions of his message. The mechanical, electrical and human adjustments are delicate. The problems of the service are not those that can be solved by legal inspection and compulsion. The difference between good and bad service may be measured in seconds, in tones or temper or truthfulness, in uniformity of human action; in perfection of thousands or millions of electrical contacts and insulations; in public patience and good-will. The pressure of competition seems the best primary reliance for good telephone service. The legal supervision of, say, a state commission, might very well second such pressure; but as the only controlling force would have much more difficulty than in dealing with any of these other services.

The Element of Diminishing Returns.

To a great extent the local telephone business, up to this time, is one of diminishing returns; that is, as lines are added to the plant, the cost of construction, maintenance and operation of each such line increases with every addition, but the charge is increased only with great difficulty, if at all. If the charge were a unit of use, as in the ordinary business, then probably this would be more analogous to the ordinary business; but even such a charge would not afford relief from large elements of construction and maintenance costs. At present the construction cost increases because the average length of line increases with the growth of the plant, and because facilities must be provided at the switchboard to connect each line with every other line, so that the addition of other lines requires facilities for just so many additional connections with each of the old and new lines. As the plant thus increases out of proportion to the number of lines, and the wear increases, the maintenance charge increases. The operation cost increases because, as extra facilities are provided, there is additional use of each line. For example, each person on a 2000-line plant uses his line for such business as he has occasion to do with those two thousand; if the plant is doubled, each of the original two thousand has his original outgoing and incoming calls plus what he has with the additional subscribers, and the new ones have more than did the old. Such being the case, there is an advantage for a large number of people in having the telephone service of a large city divided into two parts, as the charge for a single telephone of a given class on either of these divisions can be lower than it could on a system serving the whole city.

This effect of diminishing returns has probably been augmented on the whole, as it certainly has on many different occasions, by the abandon-

ment of expensive equipment long before its wearing out, brought about by the advance of invention. Many of the changes to new forms of equipment have been in the public interest as forced by competition rather than in the immediate interest of the company.

The history of telephone advancement has been about like this: The original switchboard and cable plant has been put into use as completely as its situation permitted, thereby producing its greatest possible return. Then additions are made on a large scale, they being well nigh impracticable on a small scale. Then, if the layout of the addition has been well planned, this gets into fairly complete use, and another such addition follows, each addition costing more per unit than the preceding. In this history, two elements are prominent—that the companies have seldom kept pace with the public demands, and that they are seldom able to lay out their plants to the best economic effect, because they cannot foreknow the localities of growth.

Long Distance Conditions.

The long-distance business is not so subject to the law of diminishing returns as the local, but the limit of increasing returns is soon reached. The long-distance circuits and facilities in Ohio are even now inadequate, to say nothing of the future business. In the past year the price of copper (which, by the way, is produced under non-competitive conditions) was abnormally high; few new circuits were built; and the service now approaches a condition of congestion. There is little, if anything, gained in efficiency of handling messages by combination of interests; the only gain to the companies might be an increase in traffic to that limit, which, anyway, is likely to be soon reached. Telephone circuits will accommodate only one message at a time. In present practice these seldom rise above sixty a day on any long circuit. They are not like street car tracks, on which fully loaded cars can be dispatched at short intervals. They are not even like telegraph circuits, on which two employees, handling but one message at a time, yet can get their messages in such order that one follows immediately after another. A telephone company must spend the time of circuits and employees getting two members of the public together on the line, and in recording and accounting, and this much more than the actual message, uses the circuits to the exclusion of other business. Two telegraph operators may handle as many messages in an hour as two telephone operators (and co-operating operators) in a day.

There must be a certain average of daily business to justify a new circuit, and the difference between this average and the total capacity is small.

The Independent companies have good circuits between Columbus and Cleveland and between Cleveland and Pittsburg. A good connection can

be made between Columbus and Pittsburg via Cleveland, but in commercial practice it is seldom done, because Columbus-Cleveland and Cleveland-Pittsburg traffic keeps the circuits occupied. Good commercial business between Columbus and Pittsburg can only be carried by additional circuits. Should through traction cars be desired between Columbus and Cincinnati, then traffic arrangements between the Columbus-Dayton and Dayton-Cincinnati sections would open tracks over which cars carrying a hundred times the traffic demands could run at relatively small additional expense. Should, however, similar traffic arrangements be made between telephone companies controlling like sections, the traffic conveyable between Columbus and Cincinnati could probably not be increased 10 per cent. without complete additional circuits. Again, the Independent companies can, but seldom do, build up out of certain busy local circuits a through circuit from Columbus to St. Louis. Legislative enactment might require access by the Independent subscribers in Columbus to the Bell circuits to Pittsburg and to St. Louis, but this would not be much different from compelling their access to the Independent Columbus-Pittsburg and Columbus-St. Louis circuits just described. It would be, I believe, a sad interference with the traffic conditions that have been adjusted to the public demands, besides all the other bad effects of such compulsion.

Partial Development of the Telephone Business.

A most important consideration in the telephone business is its partial development. The growth in respect to the telephone territory, as well as the number of instruments in present territory, I believe, is only well begun. The character of the equipment and the plans of cable distribution are not at all upon a settled basis. Knowledge is but partial as to what constitutes a truly economical, profitable and lasting telephone plant. The deterioration of the most expensive and vital elements of telephone properties, or other probable necessary superseding by improved forms, is unknown, except so far as we fear that our depreciation allowances are insufficient. The effect of hard times upon any notably developed telephone business is unknown, except so far as we fear that we are over-sanguine.

Unique and Immense Value of the Telephone.

Another feature of the telephone business which is entitled to the strongest emphasis is its vast public and individual value. It has increased the effectiveness of some professional and business men a dozen-fold. Businesses have been built upon it. It has brought protection to lonely residences. It has alleviated the isolation of rural life. Locally it has no rival, and has substitutes of only the crudest or time-consuming sort. Over greater distances, the only substitute, the telegraph, is, for any complex

intercommunication, relatively slow and ineffectual. In fact, the only comparison is with expensive and time-consuming personal travel. You will recall that I have recently undertaken to illustrate the importance of communication by reference to its prominence as a topic in the Farewell Address of George Washington, and in the opening address of Abraham Lincoln's first candidacy. It was slow communication, but the quickest at the time, that barely permitted Paul Revere and his fellow to rouse the defenders for the first battle of the American Revolution, and it was slow communication that permitted the battle of New Orleans and made Andrew Jackson President of the United States. If we should undertake to illustrate the value of the telephone in social and business affairs, we should be overwhelmed with instances almost equally striking. This business is one that should, by every possible means, be cherished.

The fact that it competes with no substitute (as do gas and electric lighting) could be made a text for an argument in favor of competition between separate telephone interests.

Classification of Objectors.

So far as I can see, the objections to present Ohio competitive conditions, or the desires for combination or interconnection of the competing systems, unless they may come from the companies themselves, come from four classes: First, telephone subscribers in competitive communities that do not esteem the connections of both lines worth to them the price of both; second, those affected by the absence of a competing system in Cincinnati for local and long-distance connections; third, those in the small towns and rural districts whose use of telephones is not sufficient to support competitive exchanges; fourth, those who take telephone values as a matter of course and protest against all drawbacks.

In cities, those whose business is helped by both connections but not enough to warrant their cost are, I should judge, in a small minority. Probably 15 per cent. of duplications in cities is a fair estimate. Among these are many who would need two lines in any case, besides all those whose benefits from telephone connection are far beyond their payments, leaving a small proportion who suffer any loss by reason of paying for the two connections, or by reason of failure to have the second connection always at hand. These, however, have all the advantages (which it is difficult to emphasize adequately) of the increased and increasing number on each single system. A second telephone, on the same or a different system, may be assumed to have some value in every establishment—in case of interruption on one line, in case of two persons desiring use at the same time, in case of incoming calls that might not wait for one line to be disengaged, and so on. The absolute cost of a second telephone to a grocer is less than his

profits from one regular customer; to control their trade, he could almost, if not quite, afford to pay for all his customers' residence telephones. Also, there are many who have sufficient value in their connection with the business houses, the city protective departments, the physician, the employer, and others, that can be reached by either system, or who have their particular friends on one system, and this service on the single system costs less than if the two systems were combined.

Concerning Cincinnati, I need only say that I believe the proper solution is the establishment of competitive service there. Business men stand ready to place Independent telephones in Cincinnati on a rental basis, and that, too, without counting on displacing Bell telephones.

Regarding the villages and farms, if it should appear that these cannot well support competitive exchanges, the question is, do they lose appreciably by not having connections with both systems? I think not. The great bulk of rural communication is local and to the nearest city of size. If this has competitive exchanges, then the farmer on either system can reach those most desirable to him. On those occasions when he does wish to converse with any not having his connection, the competitive toll station may not be beyond comparatively easy reach. He does not need to maintain the instrument always at hand, any more than he needs to have all through trains stop at his station so that he may step directly into a through car for every long journey.

That a large number of farmers deem their immediate local service that of greatest value, and that they recognize the element of diminishing returns on systems of any size, is plain from the number of partnerships or mutual companies or small incorporations through which they build and maintain telephone systems for themselves, frequently with one to half a dozen lines, and with switching between lines reduced to the very minimum. When these seek connections with systems that can give them extensive local or long-distance service, it becomes a matter of careful weighing of costs against benefits. Those of the smallest experience perceive that the enlargement of their service is something that must be bought and paid for, not something to be had for the asking or by legal compulsion. These same farmers know that the United States Government has spent much time and money to extend the mail delivery to them, and they know, too, the difference between establishing a service like this from public funds with expenses far in excess of the returns, and establishing it with private funds that must have some return.

The fourth class may be much heard from in the telephone business, which comes into close personal relations with almost the whole population. But much of their talk seems to resemble excessive complaints from a healthy man who has missed a meal.

Classification of Objections.

So far as they occur to me now, the expressed objections to two telephone systems fall under the classes stated below:

Increased cost to those subscribers who must have connections with both systems.

Above I mention the small proportion who pay beyond the measure of their benefits from two systems.

Inconvenience of two instruments, directories, bells, and bills.

This objection assumes that a telephone with its appurtenances and its incoming calls is essentially a nuisance, or that one instrument will do the work of two. Either may apply to some persons at some times, but not to the public generally.

Economic waste in duplicate investments.

This, with the two objections next following, are made the subject of extended comment below.

Waste in running expenses.

Inconvenience to the public of two construction systems, with duplicate pole lines, duplicate street openings, and the like.

Loss to the public through dishonesty or business failure of the projectors or purchasers of the second telephone system.

While deploring whatever such losses there may have been, it does not seem that they are represented in any considerable degree in any considerable number of telephone enterprises. Certainly they are no more great or numerous than are to be found in the ordinary conduct of business.

Loss to the public through losses enforced upon the original system by the competition.

This also seems, in the history of the business, to be relatively unimportant. Competition and advancement of whatever sort means some losses and some wastes. This entire document is an attempt to show that the gains are greater than the losses.

The business as a business should not be blamed for *deserved* losses brought about by wrongful or inefficient promotion, speculation, or management.

Inability of those on one system to communicate with the other.

This also is a topic dealt with elsewhere.

Duplicate Investments.

My view of duplicate investments, and, therefore, assumed wasteful investments, might require more figures to support than I will just now prepare or cite, as I doubt whether the conclusions will be seriously questioned without them.

If the duplication of telephone lines in a given city is 15 per cent., the investment duplication is hardly as much as 20. The largest single investment item is cable and line wire. Their cost in a well-filled plant is not duplicated in proportion to the duplicate telephones, because the duplications are mostly in the business districts nearest the exchange, where the cable units, by reason of short lengths and the most economical sizes, are cheapest, and where there may be very little use of line wire.

Switchboards, if not connected, are cheaper separated than combined. If connected, then, if common battery, they are better separated when they approach 9600 lines; and if magneto, their separation means little extra cost. On the whole, it is doubtful whether switchboard costs are duplicated beyond the proportion of line duplications, if as much. As previously shown, not all line duplications are wasteful.

Two pole lines may represent waste when they are parallel with no more of a load than could be borne on one. They may have no element of waste with a greater load, or when shared with other wire-using companies. Increasing the pole load may require larger poles and more expensive guying and assist deterioration.

Of the subway and conduit system only that smaller portion is waste which is represented by the costs of opening and repaving the streets, the manholes, and part of the digging. Subways and manholes cannot be always combined economically, particularly when the system is of large size or in streets with many obstructions.

The costs of interior wiring and instruments are duplicated in proportion to the duplication of telephones. Again, I observe not all such duplication is waste.

The buildings may well be duplicated without waste, particularly as modern construction favors plenty of space, light and air.

All the engineering and overhead expenses are relatively small and probably contain little unnecessary duplication.

Offsets Against Waste.

The risks of damage, as by fire, storm, or lightning, are lessened by a division of the properties and hence lessen the wastes. These risks cannot be covered by insurance. The appreciation of values affecting telephone construction materials, notably copper and poles, which advances appear permanent, not to insist upon the advance in wages, goes in considerable

measure to offset the loss of interest by duplication. Neither under present conditions is a large system so flexible to meet growing demands as a smaller one, and this lack of flexibility is one of the burdens of the telephone business.

I mention again, as one of the conditions assisted by competition, the abandonment of old forms of equipment for new. Few telephone switchboards have worn out in use, and very few among telephone companies are using their equipment of ten years ago. Insofar as this discarding has been in either system instead of in both, then this waste tends to diminish the waste of duplication, because such loss would have been larger for the combined system, or else the abandonment in the interest of the public would have been delayed. The same principle would apply in very many instances as affected by poor judgment in the layout of either plant or changes necessitated by conditions beyond the company's control.

If the estimate of 20 per cent. be anywhere nearly true, it is not much, if at all, greater than the waste of telephone construction by imperfect judgment and unforeseen conditions. That such waste is inevitable is plain when it is said that the telephone engineer must try to extend his cables so that they will coincide with the future centers of business and population, and that if he could locate these perfectly he would not be running cables, but enriching himself by real estate purchase and sale.

It seems safe to say that the wastes in duplication are nowhere near the wastes entailed by the undeveloped state of the art. If cable distribution to the residence districts and suburbs could be reduced to the needs for use, the saving would be enormous. A circuit of two wires from an exchange to a residence may not be used fifteen minutes a day. It is not beyond reason to expect that the engineers of the future may in this field alone effect savings far beyond the cost of present duplications. Other fields in which invention may operate to reduce wastes are in the development of by-products, telegraphing and telephoning over the same circuits on a large scale, and transmitting more than one message over the same circuit at the same time.

Past Wastes Versus Future Savings.

If it be true, then, that the progress of the art would be hastened more by competitive than by monopolistic conditions (and I can hardly see how this can be questioned), it may well prove in the long run that the saving by such progress will more than offset all the wastes of the past.

It further should be remembered that in Ohio, outside of Cincinnati, the wastes in this direction have in very great measure been heretofore incurred, and are not now to be remedied. The small relation that the subject of duplication in the larger cities bears to the subject for the whole state is illustrated in Appendix B.

Competitive Wastes in Running Expenses.

In all of those cases coming under the law of diminishing returns there is not a waste but a saving in expenses by a division. In other cases, there are none of the very largely increasing returns that have been so potent in bringing about combinations of manufacturing, transportation, mining and other business interests. The telephone business produces little on a large scale to which any economizing methods can be applied. Under the flat rate system of charging, increased use is for the public benefit and only indirectly of benefit to the company. The lines tend to carry a heavy burden of free traffic. Each new customer requires an individual and immediate investment, joined to a larger outlay which has been lying idle and carrying an interest charge. There is little saving that could be effected in selling, accounting and collection costs, and credit losses, all of which are small. The savings by standardization of equipment and methods may not equal the savings by the present widespread experimentation. We believe the same of certain relatively high costs of separate management. Combination is not needed for the maintenance of prices. Altogether there appears little motive for effecting combinations and consolidations, with the exception perhaps of the motive of monopoly.

The Pole Line Burden.

With regard to the inconvenience to the public by extra pole lines and extra openings of streets, and the like, I have little to say beyond my observation that this inconvenience has proved to be no considerable burden. It is much less than the burden of even moderate laxity in street or alley cleaning.

It is hard to imagine the burden the telephone wires *take off* the streets. If any large portion of their messages were conveyed by personal visit or by messenger, the cars, vehicles, and pedestrians might be crowded for room on the highways.

The Practicability of a Unified System.

Concerning the complaint of the inability of those on one system to communicate with those on the other, it is admitted that direct available telephone communication with the whole public would be ideal. Its practicability rests upon several assumptions, which are denied. (1) That its need is considerable; (2) that it could be achieved through plants now existing; or (3) that it would develop the great undeveloped field of service more rapidly; and (4) that its processes would offer such savings as to permit lower charges after yielding a fair profit; and (5) that it would relieve many communities from any considerable physical burden; and (6) that it would advance the art more rapidly; and (7) that it would attract more capital for

legitimate purposes; and (8) that the management of a single telephone system would be governed by the public interest or by that selfish interest that comes from observing the public good in the long run; or (9) that public demands through ordinary channels upon a monopoly would be efficacious; or (10) that the management could be directed into the channels of public interest by the powers of the government. The reasons for such denials are either so obvious or so explained herein that there is no need for comment under these separate declarations.

Is the Ohio Competition of the Best Sort?

On the one side in the Ohio telephone field are a few corporations controlled by one, through which they get the advantages of strong central organization. Some of these may be enumerated—uniformity of policy, standardization of equipment and methods, special abilities of general executive, legal and engineering officers; a large force of employees developing for promotion; the use of particularly talented persons in the line of their special talents; access to the large financial markets; general contracts with other large interests; purchasing and producing in large quantities; the exclusive use of patented instruments; and, in the telephone business, the connections between most widely spread centers, backed by thirty years' experience.

On the other side are large numbers of separate telephone associations and corporations. These have the advantages of the local interest, knowledge of local needs, access to local capital, willingness to assume the risks of a new business or new methods, the benefits of a large variety of experiments, the benefits to the public and the reactive benefits to the officers and employees of individual initiative and responsibility, the preponderance of instruments in small (and some large) communities, and so on.

Competition between these two interests has been and still is keen; and it is accompanied, for the most part, by sentiment which does not look toward yielding or combining.

The competition (after its start) has not been to any great degree of that sort which consists in each taking business from the other. Both competitors have been extending new service to the public, as the public is becoming educated to the value of the service. Here alone is an almost complete argument for the continuance of competition.

If Some Competition is Good, is More Better?

If competition between two telephone companies in a city is good, can it be said that competition between three or twelve or a hundred would be better? If two telephones have a proper economic value in the city and the department store, should there be two in the village and farmhouse? It

does not follow. Competition, if it is real, between two competitors may be just as advantageous as among a greater number. Competition in the telephone business, as in others, entails waste. I do not believe more waste than in others; in fact, I think not nearly so much as the wholesale and retail distribution of merchandise, nor anything like so much as local transportation by horses and wagons.

It is not inconsistent to say that the value of competitive service in the city may be much greater than the competitive waste, while the value of competitive service in the village is much less than the competitive waste. Two rural telephone systems may be no better worth paying for than paved roads, while one telephone system might no better serve the city than would graveled highways. I argue for competition where it pays, not for where it doesn't pay.

Non-Competitive Cities.

One answer offered to some competitive telephone argument is the citation of centers in which the business has largely developed, the rates lowered, and the service improved, without competitive conditions, such as New York, Boston, Chicago and Cincinnati. Inasmuch, however, as competition has ever appeared to threaten the monopoly in these cities, it does not seem that they are true examples of non-competitive conditions. They have had the benefits of outside local and toll line development and of inventional progress. They do not appear to have reduced their rates so soon or so much as the competitive cities. Boston has granted an independent franchise, New York is considering the question, Chicago has recently made a better bargain with the Chicago Telephone Company.

Reasons for Legislation.

When I add that the tremendous growth in the Ohio telephone service presents its own evidence of the wisdom of virtual non-interference by the state or cities, or only such interference as consists in providing authority for the competition, it may be retorted that we are inconsistent in asking aid from the state in the preservation of competition. The competitive condition is desired by the majority of telephone companies, and a few of the minority, by pursuing an individual course, looking toward its abolishment, might virtually force the remainder to follow. I believe those laws are sound which compel railroads to cease their rebates or their issue of passes when the majority desire but are unable without loss to themselves to take such action if it is not made unanimous. We should like to invoke a similar law to protect the telephone companies against selfish or short-sighted action of the minority or such misfortune as would permit any important link in one competitive system to come into possession of its competitor.

Compulsory Interchange.

The question of compulsory interchange of business is bound up with the question of competition. At the first consideration, effecting between competitors that degree of harmony and co-operation and good faith that efficient telephone operation requires, appears to be beyond accomplishment. Waiving, however, the entire consideration of these difficulties, and all problems of costs and collections, and all questions of parasitic companies, and supposing that the service could be made effective and profitable, then what of the ultimate outcome? There seems to be no escape from the conclusion that such interchange means ultimate monopoly. It would turn the case into a contest, each against the other, with one or the other having the initial advantage. The differential advantages of the competitors in securing business may be in rates, numbers, service, public custom or good-will, character of subscription list, and extent and character of long-distance connections. If the last two are equalized by interconnection, then the advantage would lie with the greater numerical list unless the rates and service are widely separated or public sentiment against the larger company. The numerical advantage would tend to increase in favor of that company getting the best start. Duplicate subscribers would tend to drop their weaker connection. Old subscribers on the weaker company would tend to change to the stronger. New subscribers would tend to take their service from the larger company. To all appearances the new subscribers before long will outnumber the old. Could the weaker save itself from bankruptcy by reducing its rates? In order to help itself, it must cut rates greatly. Could it cut expenses to correspond? An analysis of the element of diminishing returns does not yield any ground for believing this will work the other way and permit reductions in costs as a plant is reduced. The larger elements in the analysis are the construction and the maintenance expenses. The construction value of the outside plant lies largely in its layout. There is so large an element of labor in both switchboard and cable construction and removal that there is only a small element of economy in such removal; particularly if it is necessary to substitute for large cables and large switchboards, smaller cables and smaller switchboards. Each part in a telephone plant is so balanced up with every other part that the entire plant must be maintained to give acceptable service. Operation could be cheapened as subscribers diminish, but not so much as to offset the other losses. Such a rate war as the weaker company might enter upon, in the hope of recouping ultimately has, in history, almost invariably exhausted instead of strengthened the weaker company. Rate wars have been almost entirely in businesses in which they did not affect investments or long contracts, brought quick returns, and were subject to termination. A telephone cannot be sold over a counter, nor its service given in large units, nor can the revenue be increased

immediately without involving a long period of service without recompense. Telephone rates once cut are hard to restore. To put a telephone into a house means considerable outlay from the cable box to the wall—the expense of labor and irrecoverable material and of ultimate instrument recovery is often more than three months' income at full rates. The cut in the weaker's system would be lessened every time one of its subscribers paid toll for connection with the other system.

The most expensive Independent telephone rental in Ohio now is the Cleveland individual business rate of \$6.00 a month, or 20 cents a day. Business telephones can be had in Cleveland at 8 cents a day, residence telephones at 6 cents. Certainly there is not sufficient margin between these payments (carrying a value of their own) and such toll payments as would grow out of the need to talk from one competitive system to the other as to constitute cause for upsetting the business. Paying a small extra rent for special telephone facilities and opportunities is like paying extra house rent for location near a street car line.

If this prediction is well founded, then it appears that instead of compulsory interchange the state might as well declare its policy to be a monopolistic one and require that the companies shall, within three months say, so adjust their business that one or the other shall go out with as little loss as may be to its investors and leave the field to the other under such monopolistic conditions as may please the state.

Summary.

To summarize the argument: The public has gained greatly through competition, in service, rates, number of connections, attention, and forms of equipment. The local telephone business is largely one of diminishing returns. Conclusions drawn from this condition are equally applicable to those cases wherein the business shows a small degree of increasing returns. In the long-distance business the limit of increasing returns is soon reached, and the circuits on the competitive systems are now loaded nearly to their limit. There is no such condition in combination as would permit handling much additional toll traffic, whatever its source. Combination could therefore not effect much increase in traffic, and accordingly would be of little advantage to the public. The telephone service is of extraordinary value. It is still experimental in many respects. Experiments, promising even more than in the past, should be encouraged. All objectors and objections can be answered. The duplication of investments when analyzed is shown to be a source of comparatively slight waste. The savings that might be effected in running expenses by combination are slight, if they exist at all. The competition in Ohio is between interests having central organization advantages, with monopoly in certain large cities, and small separate

organizations having local advantages and control in the smaller cities and towns, is backed by sentiment, and accordingly is particularly effective. The telephone business in many essentials is different from those public utilities that have the strongest reasons for being considered necessary monopolies. Since the value of competition in the business is so great, legislation is needed to protect the majority of the companies from misfortune or monopolistic tendencies of a minority. The compulsory interchange question is the monopoly question in another form. The only safeguard against ultimate absorption of one competitor by the other under such compulsory connections would lie in the difficulties of enforcing the law.

So far as history has been made in the telephone business, it appears to bear out this entire argument. Since the beginning of competition there has been a tremendous growth in the number of subscribers in the cities and in the extension of the lines to the small cities and small communities, and in the multiplication of telephones in single establishments; there has been remarkable inventional progress; there have been lower costs and much greater value accorded the public; there has been maintained a true competition without those damaging losses which react upon the public; there has been, in the companies properly constructed and managed, a fair return to the investors; there has been no general tendency toward combinations of either competing or non-competing systems, and where such combination has been effected there appear to have grown out of it no considerable benefits, either to the combining organizations or to the public.

Very truly yours,

GANSEY R. JOHNSTON.

APPENDIX A.

[Extract from report of Harry P. Nichols, Assistant Engineer to Bureau of Franchises, New York City, dated November 21, 1906.]

Conclusions.

So far there has been a general discussion under the different headings of those points which it is believed will be of value when considering the application of the Atlantic Telephone Company for a franchise in New York City. Although the conditions which should determine this matter are alike in no two cities, and the conditions in no city are even similar to those in New York, yet to my mind these Independent companies which are now in operation throughout the country have accomplished certain desirable results.

FIRST—They have, by a vigorous campaign, been the means of creating a new interest in the telephone business, resulting in a great increase in the number of subscribers of both Independent and Bell companies, which have been of great benefit to all users of the telephone.

SECOND—They have, by competition, compelled the Bell companies to give better service.

THIRD—They have been the direct or indirect cause of reductions in rates of the Bell companies.

FOURTH—Where Independent companies have installed the automatic system, they have been able to furnish to their subscribers a more efficient service than that of the competing Bell company using the manual system.

Such I believe to be the benefits derived from the operation of a second telephone system in the majority of the cities visited, and in all places where the Independent companies are strong; that is, where they have gained a sufficient number of subscribers to be a dangerous competitor to the Bell companies.

The effect of the reduction of rates of the Bell companies, and the increased development caused by the Independent companies, upon the present cost of telephone service compared with that before competition, may be stated as follows:

Users of the Bell telephones only get better service and increased number of possible connections at less actual cost.

Users of both systems (number of telephones in the hands of such subscribers being, generally speaking, about 15 per cent. of the whole) get better service and increased number of possible connections, with the present actual cost, in a few cases about the same or less, and in other cases more than that previous to competition.

To many subscribers of the latter class the increased number of possible connections gained by the increased number of subscribers to the Bell Company added to the number of subscribers to the Independent company is of such value that the subscriber is thereby compensated for his additional outlay. Those of this class who are not so remunerated must, of course, carry the burden of increased cost, though I believe there are none who do not receive some benefit from development, which, at least, partially compensates them for the increased charge. There is no doubt that all subscribers receive the benefit of the increased efficiency of service.

I am under the impression that the benefits which have been acquired as a result of the dual system of telephony were at the cost of inconvenience to some extent to the subscriber, and as just stated, additional cost to a limited number of subscribers who are not benefited to the extent of such increased charge.

It has been herein stated that the conditions in no city are similar to those existing in New York; that is, in the extent of area, populous congestion or geographical situation, all of which have a bearing upon the size of system, method of operation and cost of service, but judging from what has been done in other cities, it is safe to state that if the New York and the New York and New Jersey Telephone Companies are not at the present time energetic in increasing telephone development in this city, are giving inefficient service or are charging excessive rates, these defects may be remedied in a measure, at least, by a second telephone system, or by proper and sufficient control by the local authorities. In the majority of cities where Independent companies are in operation, these defects did exist, there was not proper local control, and competition was the remedy.

[Note—It does not appear necessary to continue this extract into Mr. Nichols' remarks upon New York conditions, the offers of the Bell Company to reduce rates, the claims for the automatic system, etc., that have little bearing upon this discussion. There is probably enough comment upon the subject of "proper and sufficient control" throughout my letter. G. R. J.]

APPENDIX B.

[From Statistical Report of the Ohio Independent Telephone Association,
October 1, 1907.]

	TELEPHONES.	EXCHANGES.	TOLL STATIONS.	STOCKHOLDERS.
March 30, 1905	196,937	668	1,452	17,029
March 29, 1906	248,304	797	1,705	21,748
March 28, 1907	290,400	845	1,723	25,311
Oct. 1, 1907	307,674	879	1,895	25,458

Totals for October 1, 1907, show for both interests:

	INDEPENDENT.	BELL.
Telephones ;.....	307,674	166,341
Exchanges	879	304
Toll Stations	1,895	983

Hamilton county (Cincinnati non-competitive) is credited with 28,962 Bell telephones, 22 exchanges, 30 toll stations. Eliminating these figures leaves 307,674 as against 137,379 telephones in the remainder of the state. Subtract again the telephones for the counties containing the large cities—Cleveland, Toledo, Columbus and Dayton—Cuyahoga, 28,875 and 30,000; Lucas, 13,014 and 6,266; Franklin, 13,298 and 11,500; Montgomery, 9,256 and 9,057, leaves 243,231 (78% of total) and 80,556 (48%), respectively, for the two interests, this being in the ratio of 75 and 25 per cent. What duplication there is must be a fraction of 50 per cent. If 15 per cent. of duplication were applied to this 50 per cent. it would represent $7\frac{1}{2}$ per cent. of duplication; but considering the large preponderance of residence telephones in the smaller cities and towns and the almost complete absence of duplications (except in toll stations) among the farmers, the percentage must be very much smaller.

Taking those forty-eight counties which by the census of 1900 had no city over 5,000, the count shows 113,539 Independent (37% of total) and 25,851 Bell (20%)—a ratio of 82% and 18% between the two.

The small plants cost much less per telephone than the large plants, hence their percentage of duplicate cost is lessened still more.